

POSTER PRESENTATION

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# 0295. Induction and repression effects of heat shock (HS) and LPS and modulatory effects of glutamine on blood mononuclear cells -hsprotein-72 from icu patients with severe sepsis, trauma and healthy controls

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From ESICM LIVES 2014

Barcelona, Spain. 27 September - 1 October 2014

## Introduction

In severe sepsis (SS) or trauma-related systemic inflammatory response syndrome (SIRS), induction of heat-shock-protein-72 (HSP72) may protect cells from stress.

## Objectives

We compared the heat-shock (HS) with the lipopolysaccharide (LPS) induction/repression effect on HSP72 of peripheral blood mononuclear cells (PBMCs) in SS or SIRS patients and healthy-controls (H) and investigated any possible modulating glutamine (Gln) effect.

## Methods

PBMCs from 16/H, 11/SS, and 7/SIRS were incubated with 1 $\mu$ g/ml LPS or 43 $^{\circ}$  HS vs. no stimulation for 4h. In each group 3 experiments involved L-Ala-Gln10mM incubation 1h before (Gln-b) or after (Gln-a) induction, or no glutamine (1088 measurements). Intracellular Mean Fluorescence Intensity (MFI) levels of monocytes (mHSP72) or lymphocytes (lHSP72) were determined using Flow Cytometry.

## Results

In H-PBMCs, LPS did not affect mHSP72 (79  $\pm$  10 MFI vs. 78  $\pm$  13) or lHSP72 (7  $\pm$  1.7 vs. 7  $\pm$  2). HS induced mHSP72 (454  $\pm$  60,  $p < 0.0001$ ) and lHSP72 (41  $\pm$  7,  $p < 0.0001$ ) with or without Gln ( $p < 0.0001$ ). Basal mHSP72

was higher in SIRS compared to H (144  $\pm$  25 vs. 78  $\pm$  10,  $p < 0.03$ ). A HS-induction effect on SIRS-mHSP72 (394  $\pm$  108,  $p < 0.04$ ) and lHSP72 (37  $\pm$  5,  $p < 0.02$ ) was further enhanced by Gln-b (495  $\pm$  114,  $p < 0.01$  and 58  $\pm$  14,  $p < 0.04$ ). LPS suppressed SIRS-mHSP72 (120  $\pm$  54 vs. 144  $\pm$  25,  $p < 0.02$ ) especially in the Gln-b group (107  $\pm$  19,  $p < 0.02$ ). Basal Gln-b mHSP72 in SS was higher compared to H (112  $\pm$  16 vs. 69  $\pm$  10,  $p < 0.03$ ). In SS-PBMCs HS, but not LPS, induced mHSP72 (492  $\pm$  56 vs. 108  $\pm$  19,  $p < 0.003$ ). LPS repressed the SS-lHSP72 (10  $\pm$  2 vs. 17  $\pm$  2,  $p < 0.007$ ) an effect attenuated by Gln-b (13  $\pm$  5).

## Conclusions

Heat shock greatly induces mHSP72 and lHSP72 of ICU patients' PBMCs. LPS may repress lHSP72 in septic or trauma patients. Glutamine pre-treatment may either enhance HS-induction or LPS-repression on mHSP72 or attenuate LPS-repression on lHSP72 in SS and SIRS groups.

## Grant acknowledgment

This research has been co-financed by the European Union (European Social Fund (ESF)) and Greek national funds through the Operational Program "Education and Lifelong Learning" of the National Strategic Reference Framework (NSRF)-Research Funding Program: THALES.

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Published: 26 September 2014

doi:10.1186/2197-425X-2-S1-P17

**Cite this article as:** Briassouli *et al.*: 0295. Induction and repression effects of heat shock (HS) and LPS and modulatory effects of glutamine on blood mononuclear cells -hsprotein-72 from icu patients with severe sepsis, trauma and healthy controls. *Intensive Care Medicine Experimental* 2014 **2**(Suppl 1):P17.

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